

## ABSTRACT

A modified atomic force microscope (AFM) is used to perform contact resistance and/or current-dependent stiction measurements for conductive thin films at controlled values of applied force. The measurements are preferably performed under conditions approximating the operation of the thin films as electrodes in microswitch array fingerprint sensors. A first, planar thin film is contacted with a second, curved thin film deposited over a round ball having a diameter of a few microns to a few tens of microns. The second film is preferably a coating deposited over the ball and over the arm controlling the ball motion. The coating deposited over the arm provides an electrically conductive path to the contact surface of the ball.